

# DOUGLAS-FIR

## *Pseudotsuga menziesii*

### (Mirbel) Franco

plant symbol = PSME

Contributed by: USDA NRCS Plant Materials Program

#### Uses

**Wood Products:** This tree's lumber is excellent for construction. A variety of grades of veneer are manufactured which are generally used for construction. Pulp is generally used for Kraft paper. Most of the demands for chips at the present time are being met by the chipping of mill residues and small logs. Douglas-fir is excellent for poles and piling if treated. The wood is suitable for fuel. With treatment, Douglas-fir posts are quite durable.

**Christmas Trees:** In the cultured and natural state, the Douglas-fir makes an excellent Christmas tree. It responds well to all Christmas tree cultural practices.

**Wildlife:** The seed of Douglas-fir is an important food for chickadees, red crossbill, finches (house and purple), evening grosbeak, Douglas squirrel, Townsend chipmunk, deer, meadow mice, shrews, and many other birds and mammals.

The needles are an important source of food of blue and spruce grouses. Mountain beaver, deer, elk, and rabbits eat foliage and twigs within their reach. Bears may feed on new sapwood and inner bark in the spring and early summer.

**Erosion Control and Windbreaks:** Although it is seldom used, Douglas-fir is an excellent tree for windbreaks on adapted soils. It is also excellent for restoring eroded lands, watersheds, and strip-mined areas.

**Recreation:** It is an excellent tree for recreation purposes. It is windfirm on all but the wet and very shallow soils and is generally quite free from the killing attacks of insects and disease in park conditions. There is a good response to properly applied pruning, shearing, and thinning.

#### Status

Please consult the PLANTS Web site and your State Department of Natural Resources for this plant's current status (e.g. threatened or endangered species, state noxious status, and wetland indicator values).

#### Description

*Pseudotsuga menziesii*, Douglas-fir, is one of the world's most important and valuable trees. The needles persist up to 8 years and are scattered singly over the twigs. Needle length ranges from 3/4 to 1 inch and the width is approximately 1/16 inch. The bark on young stands is dark gray-brown with resin blisters. Later the bark becomes thick, reddish-brown, and is divided by deep irregular fissures. The cones are 3 to 4 inches long and are easily identified by the three pointed bracts (modified leaves) which are longer than the cone scales. On the average a heavy seed crop can be expected every 5 to 7 years. During this period, there usually is at least 1 crop failure.

#### Adaptation and Distribution

Douglas-fir needs excellent drainage. In the higher elevations of the West that receive snow and in the lower foothills that have moderately cold winters and hot summers, Douglas-fir requires moderate summer watering, generally 1-4 times per month depending upon the absorption rate and water retention capacity of the soil. It does best in full or part-shade

Douglas-fir is adapted to a wide variety of soils in terms of texture, but reaches its best development on clay loams, silty clay loams, and silt loams which are deep, moist, and well drained. Douglas-fir will not thrive on poorly drained soils with impervious layers near the surface. It is drought-tolerant and, with few exceptions, will naturally reforest droughty sites where precipitation averages 16 inches or more.

Douglas-fir is distributed primarily throughout the West. For a current distribution map, please consult the Plant Profile page for this species on the PLANTS Web site.

#### Establishment

Seedlings ranging from 2 year old bareroot plants to materials that have been field-grown for 2 years and then in containers for 2 years are used for planting stock and are usually available from state or private nurseries. There has been a general trend to use the larger planting stock to improve the chance of survival with competing vegetation. Direct seeding can be successful. Natural restocking is common on the lower sites; but on the higher sites competing

vegetation often limits reforestation, and site preparation and brush control may be necessary.

### **Management**

*Thinning:* Douglas-fir responds well to thinning at an early age or until the trees reach pole and small sawlog size. The method of thinning becomes more important in the sawlog stands. For the thinning response to be good and the danger from tipover and breakage low, care should be taken to leave the stand in a thrifty condition. During most thinning operations, it is desirable to remove some dominant, codominant, intermediate, and suppressed trees. Do not over-cut the trees in the dominant and codominant classes.

*Pruning:* Trees prune well and heal over quickly if the stands are young and less than 10 inches in diameter.

*Harvest Cut:* As a rule, the clear-cut method is used. However, the shelterwood method is beginning to be used in the southern and interior portions of its range. This applies especially to hot, dry slopes and droughty soils.

### **Pests and Potential Problems**

Several insects attack Douglas-fir, but the Douglas-fir beetle is the most important. Outbreaks usually occur in windthrown, fire-killed or felled timber. Timber in any of the conditions listed should be removed as quickly as possible. Periodic outbreaks of Douglas-fir tussock moths may cause serious damage.

Heart and root rot can be serious diseases in Douglas-fir stands. The recommended cultural practice for these rots is to remove dead and infected trees as soon as possible.

Heavy populations of bear, deer, elk, rabbits, mice, and mountain beaver can be harmful to young stands. These animals can be managed to reduce the numbers to a sustained carrying capacity. Nursery stock should be treated with repellent before it is planted. Dense stands of Douglas-fir provide little or no feed for deer and elk, but do provide excellent cover.

**Prepared By & Species Coordinator:**  
*USDA NRCS Plant Materials Program*

05Feb2002 JLK

---

For more information about this and other plants, please contact your local NRCS field office or Conservation District, and visit the PLANTS <http://plants.usda.gov> and Plant Materials Program Web sites <http://Plant-Materials.nrcs.usda.gov>.

*The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, gender, religion, age, disability, political beliefs, sexual orientation, and marital or family status. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at 202-720-2600 (voice and TDD).*

*To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326W, Whitten Building, 14th and Independence Avenue, SW, Washington, DC 20250-9410 or call (202) 720-5964 (voice or TDD). USDA is an equal opportunity provider and employer.*